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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,629	12/30/2003	Elizabeth L. Walker	ESCI-106US	7514
24239	7590	06/05/2008		
MOORE & VAN ALLEN PLLC			EXAMINER	
P.O. BOX 13706			ZHENG, LOIS L	
Research Triangle Park, NC 27709			ART UNIT	PAPER NUMBER
			1793	
			MAIL DATE	DELIVERY MODE
			06/05/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/748,629

**Applicant(s)**

WALKER ET AL.

**Examiner**

LOIS ZHENG

**Art Unit**

1793

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2, 3, 7-11, 13 and 17-28 is/are pending in the application.
- 4a) Of the above claim(s) 8-10 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2, 3, 7, 11, 13 and 17-22 is/are allowed.
- 6) ☒ Claim(s) 23-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 11, 13 and 19 are amended in view of applicant's amendment filed 20 December 2007. New claims 23-28 are added in view of applicant's amendment. Claims 8-10 remain withdrawn from consideration. Therefore, claims 2-3, 7, 11, 13 and 17-28 are currently under examination.

### ***Status of Previous Rejections***

2. All previous rejections are withdrawn in view of applicant's claim amendments filed 20 December 2007.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 23-28 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lapluye et al. US 5,156,892 (Lapluye).

Lapluye teaches applying a corrosion inhibiting solution to metal surfaces to form a protective coating(col. 1 lines 6-9 and col. 1 line 64 – col. 2 line 6). To test the effectiveness of the protective coating, Lapluye further teaches exposing treated and untreated metal surfaces to an atmosphere containing hydrogen sulfide and observe for metal surface color change(col. 3 lines 15-17). According to Lapluye, the untreated copper plate changes color entirely after 1 minute and the treated copper plate starts to change color after 132 minutes(col. 3 lines 21-23). Lapluye further teaches that the metal surfaces are first scoured by a treatment with chromic acid and rinsed with tap water and distilled water prior to the surface treatment(col. 2 lines 54-57).

Regarding instant claims 23-28, even though Lapluye does not explicitly teach that the untreated copper plate is cleaned/scoured and rinsed prior to being exposed to hydrogen sulfide, the examiner finds that Lapluye must have also subjected the untreated copper plate to the same cleaning/scouring and the rinsing steps in order for the testing of treated and untreated copper surfaces to be carried out on equal footing and with more validity and accuracy. Or alternatively, one of ordinary skill in the art would have found it obvious to have also cleaned/scoured and rinsed the untreated copper surface prior to exposing it to hydrogen sulfide test in order for the testing of treated and untreated copper surfaces to be carried out on equal footing and with more validity and accuracy.

Therefore, the untreated copper plate reads on the claimed sacrificial copper element. The scouring of metal surface with chromic acid prior to surface treatment as taught by Lapluye reads on the claimed step of contacting a sacrificial copper element

with a cleaning solution comprising a corrosion inhibitor. The testing step of exposing untreated copper surface to hydrogen sulfide containing atmosphere as taught by Lapluye reads on the claimed step of contacting the sacrificial copper element with an indicating reactant (i.e. hydrogen sulfide) that reacts with the copper surface to cause a visible color change within a predetermined period of time to indicate the absence of corrosion inhibitor on the copper surface.

In addition, since no specific structural limitations are provided with the claimed microelectronic device, the examiner concludes any article having an exposed copper surface reads on the claimed microelectronic device as claimed. Therefore, the copper plate to be treated with Lapluye's protective composition reads on the claimed microelectronic device based on the broadest reasonable interpretation. In addition, the copper plate to be treated with Lapluye's protective composition undergoes the same cleaning/scouring and rinsing steps as the untreated copper plate, which meets the limitations of instant claims 24 and 26.

Lastly, since the independent claim 23 does not require only the sacrificial copper element to be contacted with an indicating reactant, such as hydrogen sulfide, the examiner concludes that the testing process as taught by Lapluye meets the limitation of the claimed invention. The independent claim 23 also uses open-ended transitional phrase "comprising", therefore, does not exclude additional process steps such as the step of treating a cleaned and rinsed copper plate with a protective composition as taught by Lapluye.

***Allowable Subject Matter***

6. Claims 2-3, 7, 11, 13 and 17-22 are allowed.
7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not teach or fairly suggest, either alone or in combination, the claimed process of detecting the presence of a corrosion inhibitor on a microelectronic device having an exposed copper surface, said method comprising the claimed steps of (a) cleaning the microelectronic device and a sacrificial copper coupon with a cleaning solution comprising a corrosion inhibitor, (b) rinsing the microelectronic device and the sacrificial copper coupon with a rinsing solution, and (c) exposing only the sacrificial copper coupon to an indicating reactant, which results in a visible color change to the sacrificial copper coupon within a predetermined time if the corrosion inhibitor has been removed from the copper coupon.

***Response to Arguments***

8. Applicant's arguments filed 20 December 2007 have been fully considered but they are not persuasive.

In the remarks, applicant argues that Lapluye does not teach the claimed visible color change to show complete removal of any residual corrosion inhibitor on the copper surface after cleaning. Instead, Lapluye teaches No visible color change within a predetermined time to show retention of corrosion inhibitor.

Lapluye teaches the concept of treating a copper surface with hydrogen sulfide gas to test the presence or the absence of a corrosion inhibitor on the copper surface.

Color change or the lack thereof within a predetermined time period on copper surface due to the absence or presence of corrosion inhibitor is known in view of Lapluye. One of ordinary skill in the art would have known to use the hydrogen sulfide treatment test method as taught by Lapluye to indicate the presence or absence of a corrosion inhibitor with expected success in view of Lapluye's teaching. Therefore, the examiner does not consider applicant's argument persuasive.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

LLZ  
6/3/08